

CLAIMS

What is claimed is:

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1. A data entry apparatus, comprising:
 - (a) a keypad including a plurality of first keys and a plurality of second keys;
 - (b) said first keys each having at least one primary alphanumeric character associated therewith,
 - (c) at least one of said first keys having at least one secondary alphanumeric character associated therewith; and
 - (c) said first key with said secondary alphanumeric character being operable upon actuation to selectively display said secondary alphanumeric character in association with one of said second keys.
 2. The apparatus of claim 1, further comprising a display field operatively coupled to said keypad, said display field configured to selectively display said primary and secondary alphanumeric characters according to actuation of said first and second keys.
 3. The apparatus of claim 1, wherein second keys are configured to display one said secondary alphanumeric character on each said second key.
 4. The apparatus of claim 3, further comprising a touch screen in a superimposed relationship with said keypad.
 5. The apparatus of claim 1, further comprising:
 - (a) a memory operatively coupled to said keypad
 - (b) a direct memory access controller operatively coupled to said memory;
 - (c) a cyclic redundancy check circuit operatively coupled to said direct memory access controller;
 - (d) said direct memory access controller configured to transfer data from said memory to said cyclic redundancy check circuit; and

- (e) said cyclic redundancy check circuit configured to calculate a check value for said data.
6. The apparatus of claim 5, further comprising:
- (a) stored programming configured to seed said cyclic redundancy check circuit with a selected initial value;
 - (b) stored programming configured to set up said direct memory access controller with a source address for a data stream, a destination address for said data stream, and a size for said data stream; and
 - (c) stored programming configured to initiate transfer of said data stream by said direct memory access controller from said memory to said cyclic redundancy check circuit.
7. The apparatus of claim 6, further comprising:
- (a) stored programming configured to read said calculated cyclic redundancy check value from said cyclic redundancy check circuit; and
 - (b) stored programming configured to store said calculated cyclic redundancy check value in said memory.
8. The apparatus of claim 5, further comprising a display controller operatively coupled to said direct memory access controller, said direct memory access controller configured to transfer a display data stream from said memory to said display controller.
9. The apparatus of claim 8, further comprising:
- (a) stored programming configured to set up said display controller with a display address for said display data stream;
 - (b) stored programming configured to set up said direct memory access controller with a source address for said display data stream, a destination address for said display data stream, and a size for said display data stream; and
 - (c) stored programming configured to initiate transfer of said display data stream by said direct memory access controller to said display controller.

10. The data entry and display apparatus of claim 5, further comprising:
- (a) a stored list of cyclic redundancy check values corresponding to authorized strings of alphanumeric characters; and
 - (b) stored programming configured to compare a cyclic redundancy check value for an input string of alphanumeric characters entered on said keypad to said stored list of cyclic redundancy check values, and determine validity of said cyclic redundancy check value for said input string.
11. A data processing apparatus, comprising:
- (a) a keypad including a plurality of first keys and a plurality of second keys;
 - (b) said first keys each having a primary alphanumeric symbol associated therewith;
 - (c) a plurality of said first keys having secondary alphanumeric symbols associated therewith; and
 - (c) said first keys with said secondary alphanumeric symbols being operable upon actuation to selectively display said secondary alphanumeric symbols in association with said second keys.
12. The apparatus of claim 11, further comprising a display field operatively coupled to said keypad, said display field configured to selectively display said primary and secondary alphanumeric symbols according to actuation of said first keys and second keys.
13. The apparatus of claim 11, wherein said second keys are configured to display one said secondary alphanumeric symbol on each said second key.
14. The apparatus of claim 12, further comprising a touch screen in a superimposed relationship with said keypad.
15. The apparatus of claim 12, further comprising:
- (a) a memory operatively coupled to said keypad;
 - (b) a direct memory access controller operatively coupled to said memory;
 - (c) a cyclic redundancy check circuit operatively coupled to said direct memory access controller;

- (d) said direct memory access controller configured to transfer data from said memory to said cyclic redundancy check circuit; and
- (e) said cyclic redundancy check circuit configured to calculate a check value for said data.

16. The data processing apparatus of claim 15, further comprising:

- (a) programming stored in said memory capable of seeding said cyclic redundancy check circuit with a selected initial value;
- (b) programming stored in said memory capable of setting up said direct memory access controller with a source address for a data stream, a destination address for said data stream, and a size for said data stream; and
- (c) programming stored in said memory capable of initiating transfer of said data stream by said direct memory access controller to said cyclic redundancy check circuit.

17. The data processing apparatus of claim 15, further comprising a display controller operatively coupled to said direct memory access controller and said cyclic redundancy check circuit, said direct memory access controller configured to transfer a display data to stream said display controller.

18. The data processing apparatus of claim 17, further comprising:

- (a) programming stored in said memory capable of setting up said display controller with a display address for said display data stream;
- (b) programming stored in said memory capable of setting up said direct memory access controller with a source address for said display data stream, a destination address for said display data stream, and a size for said display data stream; and
- (c) programming stored in said memory capable of initiating transfer of said display data stream by said direct memory access controller to said display controller.

19. The data processing apparatus of claim 15, further comprising:

- (a) a stored list of cyclic redundancy check values corresponding to authorized strings of alphanumeric characters; and

- (b) programming stored in said memory capable of comparing a cyclic redundancy check value for an input string of alphanumeric characters entered on said keypad to said stored list of cyclic redundancy check values, and determining validity of said cyclic redundancy check value for said input string.
20. A method for data entry and display, comprising:
- (a) providing a keypad including a plurality of first keys and a plurality of second keys, each said first key having at least one primary alphanumeric symbol associated therewith and at least one of said first keys having a set of secondary alphanumeric symbol associated therewith;
 - (b) actuating a first key having an associated said set of secondary symbols; and
 - (c) displaying said set of said secondary alphanumeric characters of said actuated first key in association with said second keys.
21. The method of claim 20, further comprising selecting said primary alphanumeric symbol associated with said actuated first key.
22. The method of claim 20, further comprising selecting one of said set of secondary alphanumeric symbols of said actuated first key by actuating a corresponding one of said second keys.
23. The method of claim 22, further comprising displaying said selected secondary alphanumeric symbols in a display field.
24. A method for data entry and display, comprising:
- (a) providing a keypad including a plurality of primary keys and a plurality of secondary keys, each said primary key having a first alphanumeric character associated therewith and at least one of said primary keys having a set of second alphanumeric characters associated therewith;
 - (b) actuating said primary key having an associated said set of secondary alphanumeric symbols; and

- (c) displaying said set of said second alphanumeric characters of said actuated primary key in association with said secondary keys.

25. The method of claim 24, further comprising selecting one of said alphanumeric characters associated with said actuated primary key.

26. The method of claim 24, wherein said selecting further comprises actuating one of said secondary keys.

27. The method of claim 24, wherein said display of said selected set of said second alphanumeric characters comprises displaying one said second alphanumeric character from said set on a corresponding one of said secondary keys.

28. The method of claim 24, comprising:

- (a) entering a plurality of alphanumeric characters on said keypad to form a character string; and
- (b) processing data associated with said character string and entering said data into a memory.

29. The method of claim 28, further comprising transferring said data from said memory to a cyclic redundancy check circuit as a data stream using a direct memory access controller.

30. The method of claim 29, further comprising calculating a cyclic redundancy check value for said data stream by said cyclic redundancy check circuit.

31. The method of claim 29, wherein said transferring said data comprises:

- (a) seeding, by software, of said cyclic redundancy check circuit with a selected initial value;
- (b) setting up said direct memory access controller, by said software, with a source address for said data stream, a destination address for said data stream, and a size for said data stream;

- (c) initiating, by said software, transfer of said data stream by said direct memory access controller to said cyclic redundancy check circuit; and
- (d) transferring each byte in said data stream to said cyclic redundancy check circuit by said direct memory access controller.

32. The method of claim 28, further comprising transferring display data as a display data stream from said memory to a display controller using a direct memory access controller.

33. The method of claim 32, wherein said transferring said display data comprises:

- (a) setting up said display controller, by software, with a display address for said display data stream;
- (b) setting up said direct memory access controller, by said software, with a source address for said display data stream, a destination address for said display data stream, and a size for said display data stream; and
- (c) initiating transfer, by said software of said display data stream by said direct memory access controller to said display controller.

34. The method of claim 28, wherein said data stream represents data corresponding to a user-entered identification character string, and said cyclic redundancy check value comprises an identification cyclic redundancy check value.

35. The method of claim 34, further comprising creating a list of authorized cyclic redundancy check values and storing said list of authorized cyclic redundancy check values in said memory.

36. The method of claim 35, further comprising:

- (a) comparing said identification cyclic redundancy check value to said stored list of authorized cyclic redundancy check values; and
- (b) determining authorization for said identification cyclic redundancy check value.

37. A method for data entry and display, comprising:

- (a) providing a keypad including a plurality of hard keys and a plurality of soft keys, each said hard key having a primary alphanumeric symbol and a set of secondary alphanumeric symbols associated therewith;
- (b) actuating a first said hard key; and
- (c) displaying a first said set of said secondary alphanumeric symbols from said actuated first said hard key in association with said soft keys.

38. The method of claim 37, further comprising selecting one of said alphanumeric symbols associated with said actuated first said hard key.

39. The method of claim 37, wherein said selecting comprises:

- (a) actuating a selected one of said soft keys to select one of said first set of secondary alphanumeric symbols; and
- (b) displaying said selected one of said first set of secondary alphanumeric symbols on a display field.

40. The method of claim 39, further comprising

- (b) actuating a second said hard key; and
- (c) displaying a second set of said secondary alphanumeric symbols from said actuated second said hard key in association with said soft keys.

41. The method of claim 40, further comprising selecting one of said alphanumeric symbols associated with said actuated second said hard key.

42. The method of claim 41, wherein said selecting comprises:

- (a) actuating a selected one of said soft keys to select one of said second set of secondary alphanumeric symbols; and
- (b) displaying said selected one of said second set of secondary alphanumeric symbols on a display field.

43. The method of claim 42, further comprising

- (b) actuating an nth said hard key; and

- ~~(c) displaying an nth set of said secondary alphanumeric symbols from said actuated nth said hard key in association with said soft keys.~~

44. The method of claim 43, further comprising selecting one of said alphanumeric symbols associated with said actuated nth said hard key.

45. The method of claim 44, wherein said ~~selecting~~ comprises:

- (a) actuating a selected one of said soft keys to select one of said nth set of secondary alphanumeric symbols; and
- (b) displaying said selected one of said nth set of secondary alphanumeric symbols on a display field.

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